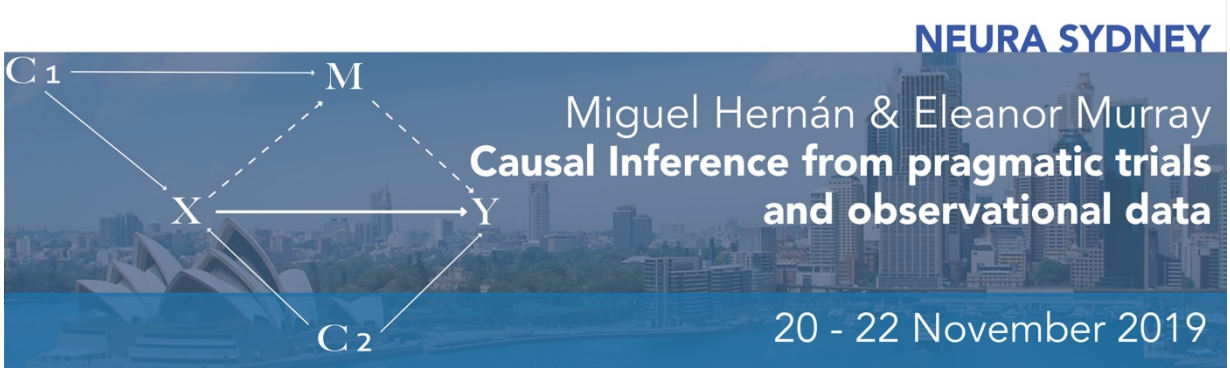
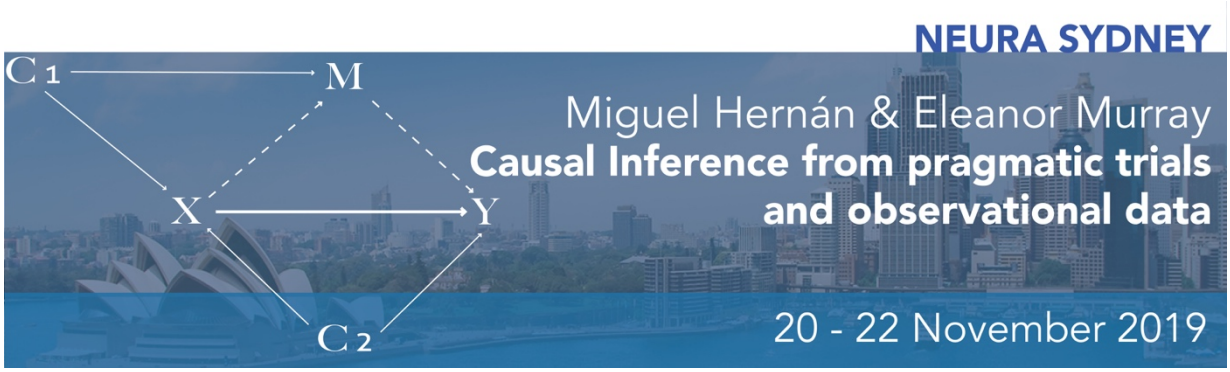


Getting the most out of pragmatic trials – beyond intention to treat

Dr Eleanor Murray
School of Public Health, Boston University

Wednesday, 20th November 2019 **Day 1**	
8.30am	Registration opens
9.00am	Welcome & housekeeping – A/Prof James McAuley
9.10am	What is a pragmatic trial?
	Asking good causal questions
10.30am	Morning tea break
11.00am	Understanding causal graphs
12.30pm	Lunch break
1.30pm	Intention-to-treat effects, but better
	Per-protocol effects, done right
3.00pm	Afternoon tea break
3.30pm	Guidelines for causal inference from pragmatic trials
5.00pm	End of Day 1

Thursday, 21st November 2019 **Day 2 - Morning**	
9.00am	Practicum: Estimating causal effects from pragmatic trials with survival outcomes
10.30am	Morning tea break
11.00am	Practicum: Estimating causal effects from pragmatic trials with survival outcomes *continued*
12.30pm	Lunch break

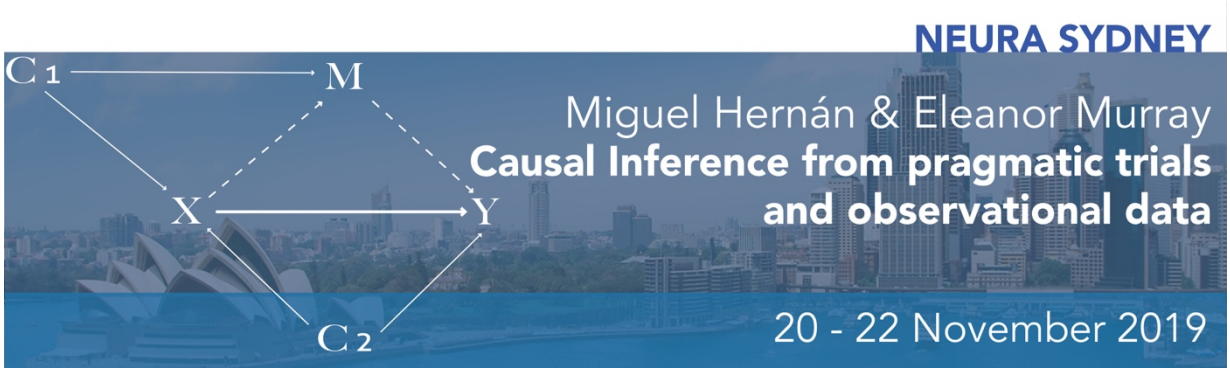


Causal inference from observational data: Learning what works

Professor Miguel Hernán
Departments of Epidemiology and Biostatistics,
Harvard T.H. Chan School of Public Health

Thursday, 21st November 2019 **Day 2 – Afternoon**	
12.30pm	Lunch break
1.30pm	Introduction: Asking causal questions *Case study #1: Hormone therapy and coronary heart disease*
	Emulating the target trial *Case study #2: Statins and mortality in cancer patients*
3.00pm	Afternoon tea break
3.30pm	Choosing time zero *Case study #3: Screening colonoscopy and colorectal cancer*
5.00pm	End of Day 2

Friday, 22nd November 2019 **Day 3**	
9.00am	Confounding adjustment: emulating randomization *Case study #4: Statins and coronary heart disease*
10.30am	Morning tea break
11.00am	Treatment strategies *Case study #5: Epoetin dosing and mortality in hemodialysis patients*
	Sustained treatment strategies
12.30pm	Lunch break
1.30pm	Strategies with a grace period *Case study #6: When to start antiretroviral therapy in HIV-infected individuals*
3.00pm	Afternoon tea break
3.30pm	Instrumental variable estimation
5.00pm	End of Course



Course Preparation

Getting the most out of pragmatic trials – beyond intention to treat
Dr Eleanor Murray

- Attendees should have a laptop with R, Stata, or SAS installed
- Instructions on how to install R are attached in a separate document.

Course pre-reading:
Murray EJ, Young JG, Swanson S, Robins JM, Hernán MA. *Guidelines for estimating per-protocol effects in pragmatic randomized trials*. Available for download: https://www.hsph.harvard.edu/causal/pragmatictrials/

Further reading:

- Hernán MA, Robins JM. Per-protocol analyses of pragmatic trials. *New England Journal of Medicine*. 2017;377(14):1391–8
- Murray EJ, Hernán MA. Improved adherence adjustment in the Coronary Drug Project. *Trials*. 2018;19:158
- Murray EJ, Hernán MA. Adherence adjustment in the Coronary Drug Project: A call for better per-protocol effect estimates in randomized trials. *Clinical Trials*. 2016;13(4):372-378
- Murray EJ, Caniglia EC, Swanson S, Hernández-Díaz S, Hernán MA. Patients and investigators prefer measures of absolute risk in subgroups for pragmatic randomized trials. *Journal of Clinical Epidemiology*. 2018;103:10-21.

Causal inference from observational data: Learning what works
Professor Miguel Hernán

Course pre-reading:
Chapters 1-3. Hernán MA, Robins JM (2020). *Causal Inference. Boca Raton: Chapman & Hall/CRC, forthcoming*. Available for free download: http://www.hsph.harvard.edu/miguel-hernan/causal-inference-book/

Further reading:

- Hernán MA, Robins JM. Using big data to emulate a target trial when a randomized trial is not available. *American Journal of Epidemiology*. 2016;183(8):758-764
- Hernán MA, Sauer BC, Hernández-Díaz S, Platt R, Shrier I. Specifying a target trial prevents immortal time bias and other self-inflicted injuries in observational analyses. *Journal of Clinical Epidemiology*. 2016;79:70-75
- Garcia-Albeniz X, Hsu J, Hernán MA. The value of explicitly emulating a target trial when using real world evidence: an application to colorectal cancer screening. *European Journal of Epidemiology*. 2017;32(6):495-500
- Hernán MA. How to estimate the effect of treatment duration on survival using observational data. *BMJ*. 2018; 360:k182.